REMARKS

Reconsideration of this application is respectfully requested in view of the following remarks.

The Applicant appreciates the Examiner's indication in the telephone conversation of March 13, 2006, that the finality of the outstanding Office Action will be withdrawn. The Applicants further appreciate the Examiner's willingness to grant a personal interview to expedite prosecution of this application, as conveyed by the Examiner in the telephone conversation of March 13, 2006.

Claims 1-7 and 9-30 are currently pending in the application and subject to examination.

In the Office Action mailed December 21, 2005, claims 1-7 and 9-30 were rejected under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 5,363,413 to Vos (hereinafter, "Vos"). The Applicant hereby traverses this rejection, as follows.

Each of independent claims 1, 3, 9, 10, 12, 13, 15 and 17 is directed to one of a method of decoding multiplexed data, a data receiving system, a decoder, and a data transmitting and receiving system. In each of the independent claims, time division multiplexed data that includes a plurality of data streams that are convolutionally encoded with different coding rates and modulated using any one of BPSK, QPSK, and 8PSK, is decoded using a Viterbi decoder and/or a Viterbi decoding algorithm. Further, in each of the independent claims, a path metric is initialized after completion of decoding of a first data stream, which is included in the time division multiplexed data and is modulated using any one of 8PSK and QPSK, and before performing decoding of

a second data stream, which is included in the time division multiplexed data and is modulated using any one of QPSK and BPSK.

The quality of a path metric decreases as the number of transmission errors in the data being decoded increases. If the condition of a transmission line is the same for an 8PSK data stream, a QPSK data stream and a BPSK data stream, the 8PSK data stream will have the greatest number of transmission errors and the BPSK data stream will have the least. Thus, the quality of a path metric for an 8PSK data stream is poorer than the quality of the path metric for a BPSK (or QPSK) data stream when the condition of the transmission line is the same.

Attached hereto in Fig. A is a conceptual diagram showing a relationship between code strings (data streams) to be error corrected and the quality of a path metric. "Metric Quality 1" represents the quality of the path metric during a conventional decoding process, and "Metric Quality 2" represents the quality of the path metric during a decoding process according to a method or apparatus of the claimed invention.

As shown in the top diagram of Fig. A, after the decoding of each code string begins, the Metric Quality 1 approaches a value corresponding to the inherent quality of each code string (i.e., 8PSK, QPSK, BPSK). As shown the circles marked "a" in the top diagram of Fig. A, after decoding the 8PSK code string, at the start of decoding the BPSK code string, the poor quality demonstrated during the decoding of the 8PSK code string remains for a period of time during the BPSK decoding. Thus, the poor quality exhibited during the decoding of the 8PSK code string disadvantageously affects the error-correction of the BPSK code string.

In contrast, in the claimed invention, the path metric is initialized after completion of the decoding of the first data stream, which is modulated using 8PSK or QPSK, and before performing the decoding of the second data stream, which is modulated using either QPSK or BPSK. If the first data stream is modulated using 8PSK, the first data stream will have more errors than the second data stream. By initializing the path metric after finishing decoding of a first data stream having more errors and before starting decoding of a second data stream having fewer errors, the poor metric quality of the preceding time period can be canceled. As shown the circles marked "b" in the bottom diagram of Fig. A, after decoding the 8PSK code string, at the start of decoding the BPSK code string, the path metric is initialized, thereby canceling the poor quality demonstrated during decoding of the 8PSK code string. As a result, the BPSK data stream can be error-corrected normally.

It is noted that a similar situation occurs when finishing decoding of an 8PSK data stream and beginning the decoding of a QPSK data stream and when finishing decoding of a QPSK data stream and starting the decoding of a BPSK data stream.

Thus, by the present invention, the path metric is not calculated based on a previously input data stream that includes errors.

Vos discloses a data decoder and method in which frequency modulation is employed (see Vos, col. 3, lines 31-32). Vos neither discloses nor suggests phase-shift keying. Accordingly, Vos does not disclose or suggest initializing a path metric after completion of decoding of a first data stream, which is included in the time division multiplexed data and is modulated using any one of 8PSK and QPSK, and before performing decoding of a second data stream, which is included in the time division

multiplexed data and is modulated using any one of QPSK and BPSK, as recited in the claimed invention.

For at least this reason, the Applicant submits that independent claims 1, 3, 9, 10, 12, 13, 15 and 17 are allowable over the cited prior art. As claims 1, 3, 9, 10, 12, 13, 15 and 17 are allowable, the Applicant submits that claims 2, 4, 5-7, 11, 14, 16 and 18-30, each of which depends from one of allowable claims 1, 3, 9, 10, 12, 13, 15 and 17, are likewise allowable over the cited prior art.

Conclusion

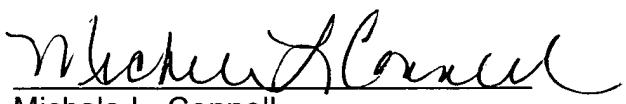
For all of the above reasons, it is respectfully submitted that the claims now pending patentability distinguish the present invention from the cited reference. Accordingly, reconsideration and withdrawal of the outstanding rejection and an issuance of a Notice of Allowance are earnestly solicited.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In the event this paper is not considered to be timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fee deficiently or credit any over payment to Deposit Account No. 01-2300, making reference to Attorney Docket No. 08391-00010.

Respectfully submitted,

ARENT FOX PLLC



Michele L. Connell
Registration No.: 52,763

Customer No. 004372
1050 Connecticut Avenue, NW, Suite 400
Washington, DC 20036-5339
Telephone: (202) 857-6104
Fax: (202) 857-6395

CMM/MLC/vdb

Enclosures: Appendix 1: Fig. A